

ALTERNATIVE DC POWER SYSTEMS

Thermoelectric generators

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Sheet: 1 of 1

German Cathodic Protection

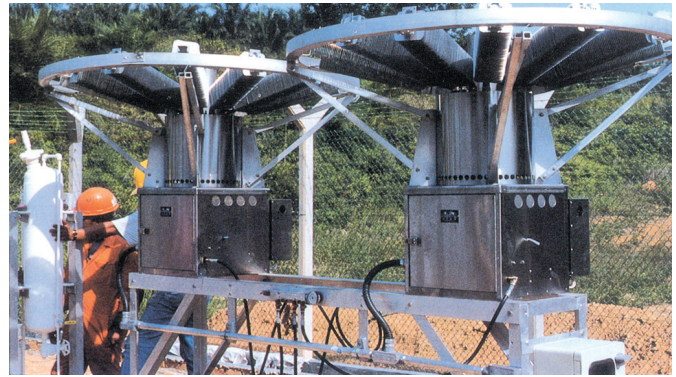


Thermo electric generators produce power by directly converting heat into electricity.

The heart of a thermoelectric generator is a hermetically sealed thermoelectric module (thermopile) which contains an array of lead-tin-telluride semiconductor elements. This durable module provides a chemically stable environment for the thermoelectric materials which ensures a long service life. A gas burner is installed on one side of the thermopile while the other side is cooled by aluminium cooling fins or a heat pipe assembly.

An operating generator maintains a temperature of approximately 540°C on the hot side and 140°C on the cold side. The heat flow through the thermopile creates continuous DC output with no moving parts.

The burners can be fuelled by propane, butane or natural gas and it is specially designed for low-maintenance operation. Air intakes and exhausts are protected against rain, dust and strong winds.



Natural gas pipelines are often protected with current supplied from thermoelectrical generators fuelled with natural gas tapped from the pipeline via suitable pressure reducing and valve arrangements.

Solid state DC-DC converters are used to control the output of the generators to provide constant current, constant voltage or constant pipe-to-soil potential, using a permanent reference electrode to provide a feedback signal.

Model	Power specifications	Electrical	Fuel	Environmental	
5030	Power ratings @ 20 °C 21 W @ 12 V 21 W @ 24 V	Adjustment 12 V 12 - 18 V 24 V 24 - 30 V	Natural gas 1000 BTU/SCF (37.7 MJ/SM ³) gas	2.1 m ³ /day	Ambient operation temperature Max. 55 °C Min. -55 °C
			Propane	3.0 l/day	
			Maximum supply pressure	1724 kPa (250 psi)	
			Minimum supply pressure	103 kPa (15 psi)	
5060	Power ratings @ 20 °C 60 W @ 6.7 V 54 W @ 12 V 54 W @ 24 V 54 W @ 48 V	Adjustment 6.7 V 6.7 - 11 V 12 V 12 - 18 V 24 V 24 - 30 V 48 V 48 - 60 V	Natural gas 1000 BTU/SCF (37.7 MJ/SM ³) gas	4.4 m ³ /day	Ambient operation temperature Max. 55 °C Min. -55 °C
			Propane	5.7 l/day	
			Maximum supply pressure	1724 kPa (250 psi)	
			Minimum supply pressure	103 kPa (15 psi)	
5120	Power ratings @ 20 °C 120 W @ 6.7 V 108 W @ 12 V 108 W @ 24 V 108 W @ 48 V	Adjustment 6.7 V 6.7 - 11 V 12 V 12 - 18 V 24 V 24 - 30 V 48 V 48 - 60 V	Natural gas 1000 BTU/SCF (37.7 MJ/SM ³) gas	8.8 m ³ /day	Ambient operation temperature Max. 55 °C Min. -55 °C
			Propane	11.4 l/day	
			Maximum supply pressure	1724 kPa (250 psi)	
			Minimum supply pressure	103 kPa (15 psi)	
5220	Power ratings @ 20 °C 220 W @ 12 V 176 W @ 24 V	Adjustment 12 V 12 - 18 V 24 V 24 - 30 V	Natural gas 1000 BTU/SCF (37.7 MJ/SM ³) gas	19.7 m ³ /day	Ambient operation temperature Max. 55 °C Min. -55 °C
			Propane	28.0 l/day	
			Maximum supply pressure	1724 kPa (250 psi)	
			Minimum supply pressure	241 kPa (35 psi)	
1500	Power ratings @ 20 °C 500 W @ 24 V	Adjustment 24 V 24 - 30 V	Natural gas 1000 BTU/SCF (37.7 MJ/SM ³) gas	48.0 m ³ /day	Ambient operation temperature Max. 50 °C Min. -50 °C
			Propane	n/a at this time	
			Maximum supply pressure	410 kPa (60 psi)	
			Minimum supply pressure	207 kPa (30 psi)	
8550	Power ratings @ 20 °C 480 W @ 12 V 550 W @ 24 V 480 W @ 48 V	Adjustment 12 V 12 - 18 V 24 V 24 - 30 V 48 V 47 - 57 V	Natural gas 1000 BTU/SCF (37.7 MJ/SM ³) gas	48.0 m ³ /day	Ambient operation temperature Max. 50 °C Min. -50 °C
			Propane	76.0 l/day	
			Ethylene	29.9 m ³ /day	
			Maximum supply pressure	1724 kPa (250 psi)	
			Minimum supply pressure	207 kPa (15 psi)	

Models shown are for standard configurations. The engineering department can design installations meeting different specifications, including custom voltages, fuel supply systems and non-standard operating temperatures.